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Canadian Forestry Service-Maritimes
TECHNICAL NOTE

SPRUCE BUDWORM DEFOLIATION IN NOVA SCOTIA - 1986

Defoliation by the spruce budworm in Nova Scotia is assessed annually through an aerial survey of the degree of redness of spruce and fir foliage. The 1986 survey, conducted during the first week of July, was a cooperative project of the Forest Insect and Disease Survey of the Canadian Forestry Service and the Nova Scotia Department of Lands and Forests.

Survey Results

For the second consecutive year, defoliation detectable from the air was restricted to the north-central Nova Scotia counties of Cumberland, Colchester, Pictou and Antigonish. No defoliation was detected on Cape Breton Island or in the Annapolis Valley (Figure 1).

The total area of defoliation in 1986 increased to 431 000 ha from 345 000 ha in 1985 however the area in the moderate or severe category decreased to 289 000 ha in 1986 from 319 000 ha in 1985. It is moderate and severe defoliation which causes more significant forest damage and so this decrease is seen as a positive trend. Whereas in 1985 a substantial area was described as being severely defoliated with moderate patches interspersed (280 000 ha), in 1986 a reverse situation of an area of moderate defoliation with severe patches interspersed (76 000 ha) and a large area of just moderate (207 000 ha) defoliation was described. Table 1 summarizes the defoliation areas by county for 1986.

Light defoliation, which is often difficult to judge from the air and is more subject to the effects of rain was much greater in 1986 than 1985. An extended rain, reported in 1985, may have washed off enough of the reddened needles to apparently reduce the area of light defoliation that year. The 1985 aerial defoliation map is provided in Figure 2 for comparison.

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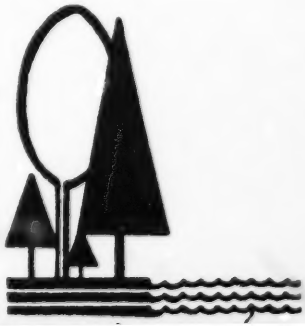

Canadian Forestry Service - Maritimes
P.O. Box 4000, Fredericton, N.B. E3B 5P7
P.O. Box 667, Truro, N.S. B2N 5E5
P.O. Box 190, Charlottetown, P.E.I. C1A 7K2

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Factors Affecting the 1986 Aerial Survey

This year weather conditions leading up to the aerial survey were relatively good. Inclement weather towards the end of the survey and the fact that the survey was left later than the optimum, an impression shared by the observers, may have had the effect of reducing some categories in Pictou and Antigonish counties.

Late spring frosts in Nova Scotia caused foliage reddening which may have been confused with defoliation during the survey. This would have the effect of causing defoliation to appear worse than it actually was. Areas of moderate and low defoliation along the Midas Basin coast east of Five Islands, Colchester Co. are suspect here.

Additional Observations of Defoliation

In addition to what was detected from the air, ground surveys have reported areas of significant defoliation in a coastal band from Merigomish, Pictou County to Cape George Point, Antigonish County. Along the Colchester/ Cumberland County lines, near the Lynn Road small patches of severe, moderate and light were detected.

Historical Trends

A comparison of defoliation levels over the last five years for the forest sub-divisions of Nova Scotia is given in Table 2. While 1986 presents the greatest total area of measured defoliation it also has the least amount of severe defoliation in five years.

Summary

A 10% decrease in the area of moderate to severe defoliation occurred in Nova Scotia between 1986 and 1985. Most significant was a sharp reduction in the area of severe defoliation.

Defoliation remained concentrated in north-central Nova Scotia. Cape Breton Island and the Annapolis Valley/Hants County sub-divisions have been almost defoliation-free for three years.

Table 1. Areas of spruce budworm defoliation in Nova Scotia by County in 1986 (hectares).

COUNTY	LIGHT	MODERATE	MODERATE WITH SEVERE	SEVERE	TOTAL
Antigonish	2 569	4 558	--------	------	7 127
Pictou	30 395	41 440	4 983	2 100	78 918
Colchester	34 676	24 242	8 003	-----	66 921
Cumberland	75 060	136 960	62 514	3 800	278 334
TOTAL	142 700	207 200	75 500	5 900	431 300

Table 2. Areas of spruce budworm defoliation by region since 1982 ('000 hectares)

Region of Province	Year	Light	Moderate[2]	Severe[1]	Total
Cumberland and Colchester	1982	13.6	92.0	48.9	154.5
	1983	6.4	18.9	158.6	183.9
	1984	15.9	23.5	13.7[1]	53.1
	1985	25.6	25.5[2]	154.2[1]	205.3
	1986	*109.7*	*231.7*[2]	*3.8*	*345.2*
Pictou, Antigonish and Guysborough	1982	11.0	28.7	0.8	40.5
	1983	21.8	16.5	38.2	76.5
	1984	4.2	9.3	12.2[1]	25.7
	1985	0.7	6.5[2]	132.6[1]	139.8
	1986	*33.0*	*51.0*[2]	*2.1*	*86.1*
Annapolis Valley and Hants County	1982	0.0	4.1	0.0	4.1
	1983	34.7	14.4	29.9	79.0
	1984	6.3	0.0	0.0	6.3
	1985	0.0	0.0	0.0	0.0
	1986	*0.0*	*0.0*	*0.0*	*0.0*
Cape Breton Island	1982	12.3	0.4	0.0	12.7
	1983	0.5	2.2	15.5	18.2
	1984	0.0	0.0	0.0	0.0
	1985	0.0	0.0	0.0	0.0
	1986	*0.0*	*0.0*	*0.0*	*0.0*
Total	1982	36.9	125.2	49.7	211.8
	1983	63.4	52.0	242.2	357.6
	1984	26.4	32.8	25.9[1]	85.1
	1985	26.3	32.0[2]	286.8[1]	345.1
	1986	*142.7*	*282.7*[2]	*5.9*	*431.3*

[1] 1985 severe with some moderate patches.

[2] 1986 moderate with severe patches.

-B.A. Pendrel[1], T.D. Smith[2] and L.P. Magasi[1]
November, 1986

[1] Forest Insect and Disease Survey, Canadian Forestry Service-Maritimes

[2] Nova Scotia Department of Lands and Forests

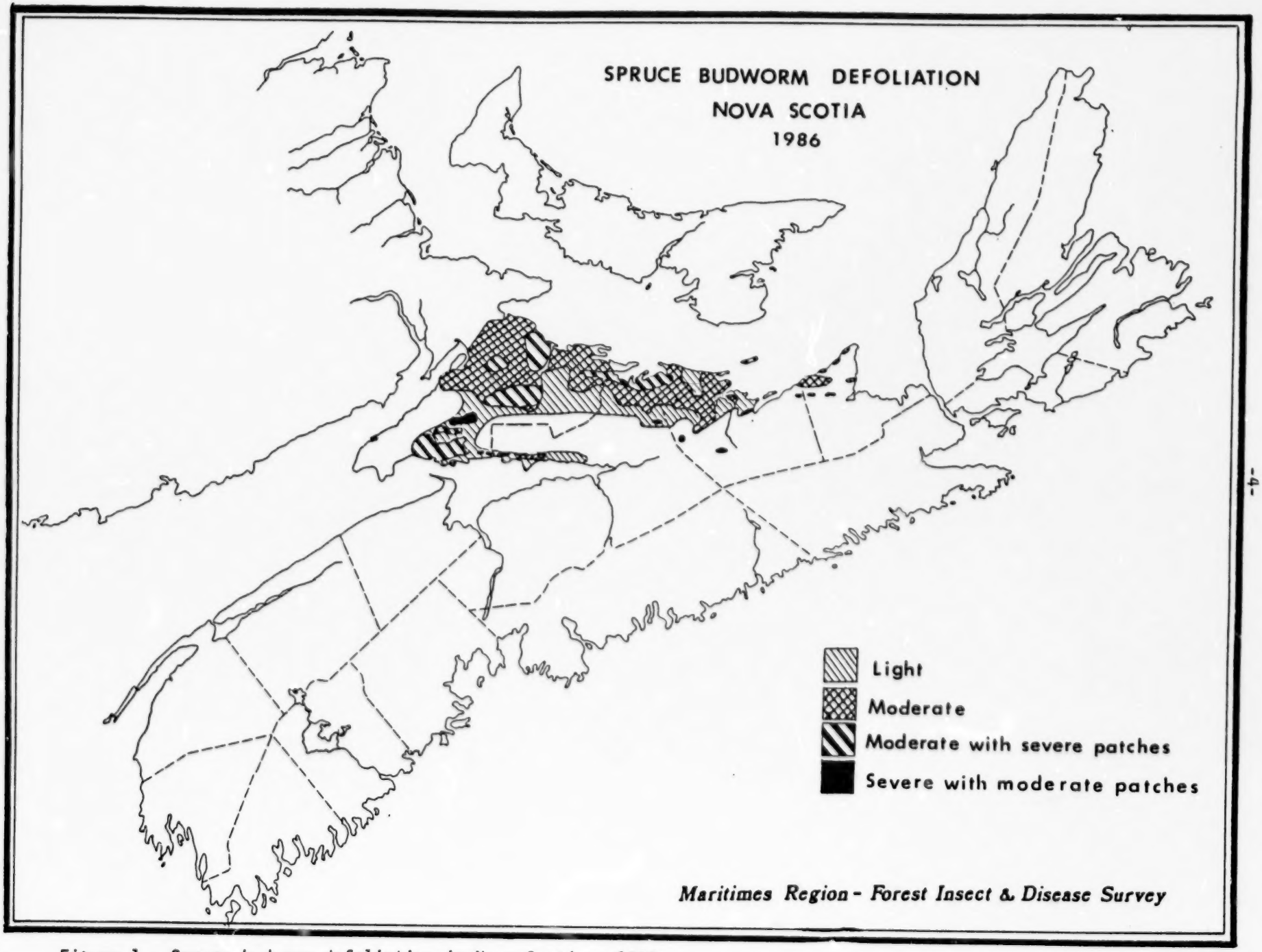
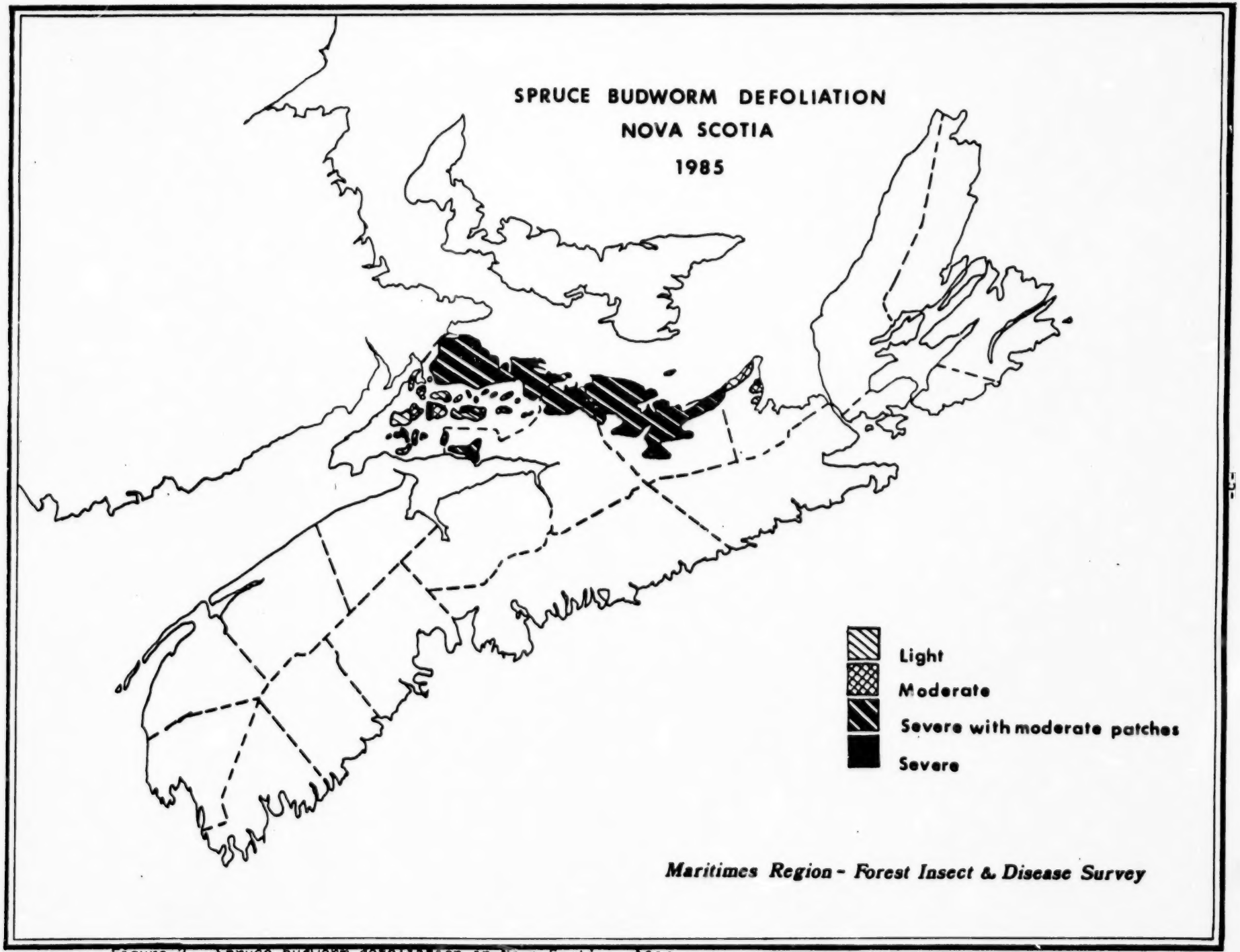


Figure 1 Spruce budworm defoliation in Nova Scotia - 1986


SPRUCE BUDWORM DEFOLIATION
NOVA SCOTIA
1985
Light
Moderate
Severe with moderate patches
Severe
Maritimes Region - Forest Insect & Disease Survey